Costgold Research Limited

Technical Note: MSDOS and GM886
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1. Purpose

This technical note details problems which have been encountered in systems using GM886 processor cards with revision 1.1 C-ROM Bios. It is not exhaustive, in that only a limited range of available operating systems have been tried, but it does cover a number of pitfalls which have been encountered.

The problems encountered are:

a. Miniscribes shipped with incorrect configuration links.

b. Problems with formatting Miniscribes.

c. Problems with setting up CPM/DOS minis.

2. Miniscribe configuration links.

The Miniscribe has a configuration link which selects which drive responds to which select code. This configuration link defaults to RESPONDING TO EVERY DRIVE SELECT CODE. This must be modified to select only the Drive 1. This is because at boot up time MS-DOS attempts to access both drives C and D to see how many hard discs are fitted. Consequently the drive as shipped responds to both these addresses and the OS thinks that there are two hard discs present. To correctly select the drive the link should be configured as follows:

Link 16 - 1	BROKEN	-	To select DAISY CHAIN
Link 9 - 8	SHORTED	-	To select drive 1
Link 10 - 7	BROKEN	-	To De select drive 2
Link 11 - 6	BROKEN	-	To De select drive 3
Link 12 - 5	BROKEN	-	To De select drive 4

NOTE: Costgold Research Limited accepts no responsibility from damage arising through incorrect disassembly to modify the Miniscribe configuration links. This is entirely the responsibilty of owner/modifier of the drive. If there is any doubt the system should be returned to Gemini or an authorised dealer.

3. Hard discs, partitions and operating systems

A DOS format hard disc contains a small area of control data on the first physical sector of the hard disc. This is called the **Partition Table** and is used by ALL OPERATING SYSTEMS to determine whereabouts on the hard disc the relevant data for the particular operating system is placed.

In the next release of the C-ROM Bios this partition table will also contain information used in booting the operating system. Currently, it contains a standard DOS partition table, and one additional byte which is the HARD DISC TYPE byte. This is interpreted by the harddisc driver to set up the SCSI controller with the appropriate data fields. At boot up, the C-ROM Bios checks the hard disc first to see if it is there, and then to see if this type is correctly set, in which case it will load the H.D controller accordingly. If the drive type is not set, then a message "Hard Disc Type Uncertain" is output to the console and a list of available hard disc types is displayed. The operator must then select the appropriate hard disc type (ie 5 for Miniscribe 3212).

4. Formatting As ALL MS-DOS

Miniscribes may contain data which the various DOS format routines do not like and this leads to them returning an error of the form "Format Failure". It is not clear why this happens. To overcome this it is necessary to format the required disc or partition with the DOS sector information. This is done as follows:

Either enter the following using DEBUG:

```
-A<c/r>
-NNNN:0100 MOV AX, 700 <c/r>
-NNNN:0103 MOV CX, 1 <c/r>
-NNNN:0106 MOV DX, 80 <c/r>
-NNNN:0109 INT 13 <c/r>
-NNNN:010B MOV AX, 0 <c/r>
-NNNN:010D INT 21 <c/r>
-NNNN:010F <c/r>
-G <c/r>
```

The hard disc should now be accessed for a few tens of seconds, and the message:
-program terminated normally
should be output.

Alternatively the utility FCHD.COM may be obtained from Gemini and run.

This will have replaced all the data on the disc with the MS-DOS compatible format information INCLUDING the partition table. The next step is to run the FDISK program. With FCHD, all the disc

will have been reformatted, so select the option which makes the whole disc an MSDOS partition, and select the Boot or Active partition option.

Now reboot the system from the RESET button again, and then when this has been done, reset the hard disc type to the appropriate drive type again. Run the Utility FDISK to set up the partition table. In this case select the "All as DOS" and "BOOT" options. Depending upon the particular version of FDISK it will prompt to press any key to restart, but it requires pressing the Reset button normally.

Once again, reselect the drive type, as the partition table will have been re-written and this does not preserve the Hard Disc Type flag.

Now select FORMAT C:/S and the hard disc will be formatted.

5. Formatting as CPM/DOS

The current Gemini BIOS splits a 10 MB drive into two partitions. The second of these starts at cylinder 314. Gemini have a very simple DOS utility called FCASDOS (Format-C-AS-DOS). This may be run to hard format 314 onwards to the DOS specification. Run FDISK and select the start cylinder as 314 and the partition size as 207. Re boot and reselect the drive type and run FORMAT.

This will give a drive of approximately 5.5 MB. CP/M may be run by entering DEBUG and typing:

-O10,1 <c/r>

Unfortunately this only works once after each power up because of a problem with the Z-80 reset logic. Pressing the reset button to return to MSDOS works, but to go to CPM again requires a power down.

6. Known Problems with 1.4X C-ROM-Bios

This software is still under development and a number of minor features need to be understood to avoid major problems:

a. HARD DISC NOT READY

Problem

The BIOS does not correctly check the status of a hard disc to see if it is still running up. It also does not correctly offer the reboot message from a hard disc.

Solution

Reset the CPU after the hard disc has run up to speed.

b. Display "scroll-up" emulation

Problem

Although the C-ROM Bios provides a partial emulation of the IBM PC display mode interrupt (INT 10H) it does not support the scroll up function correctly. This is soon to be rectified.

Solution

Don't run programs that use this facility until fix is available.

Problem

Existing CM806 V1.4X C-ROM Bios does not support serial port interface correctly.

Solution

The serial port hardware and interrupt work OK so directly manipulate these. An upgrade will be shortly available.

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